VideoFlow

Broadcast With
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TV Studios Collaboration over IP Networks

TeamStudio Live Use Case

"The Show Must Go On"

The COVID-19 pandemic has underscored the intrinsic value of linear TV, particularly its scale and efficiency in serving large viewing audiences. Today, more and more people are putting their trust in live TV to keep them informed and entertained amid the crisis. More viewers mean more advertising revenues, which are expected to return to and even exceed previous levels as companies will spend advertising dollars to compensate for current decreases in sales.

Social distancing has accelerated the trend towards live collaboration across studios, where one or more participants may be located at a remote studio - even at home. TV stations have already adopted this format where it makes sense to broadcast specific segments from remote locations (e.g., weather forecast).

Ensuring Low Latency, Security and Remote Management among Studios

Live collaboration among team members at the main and remote studios poses significant operational challenges for TV producers.

The primary challenge is to ensure natural conversation and collaboration among all show participants (e.g., the banter between a meteorologist at a remote studio and a news anchor in the main studio). To achieve that, TV stations need low latency 2-way connections.

Effective collaboration also requires bi-directional capabilities to ensure a seamless, interactive broadcast. It means supporting a live feed from the remote studio to the main studio, as well as real-time feeds from the main studio to the remote studio for monitor, teleprompter, and intercom connectivity.

Ensuring feed continuity is also challenging, as remote studios (particularly home studios) typically have a standard Internet or a Dedicated Internet Access (DIA) connection. Thus, to ensure uninterrupted, reliable broadcast over extended periods, the required solution must boost the reliability of the IP connection to a level compatible with satellite links or leased lines.

Cybersecurity is another "must-have" requirement since the remote studios must connect to the main studio's network. A remote connection might open a backdoor for hacking and eavesdropping. Solutions having an integrated firewall and a secure end-to-end connection (e.g., UDP VPN Tunnel) eliminate these hazards.

Remote technical support is also essential to allow the IT staff at the main studio to configure and manage equipment at the offsite studios. Moreover, an effective solution will provide all the statistics (video and network) and tools required to resolve any issue in the shortest possible time.

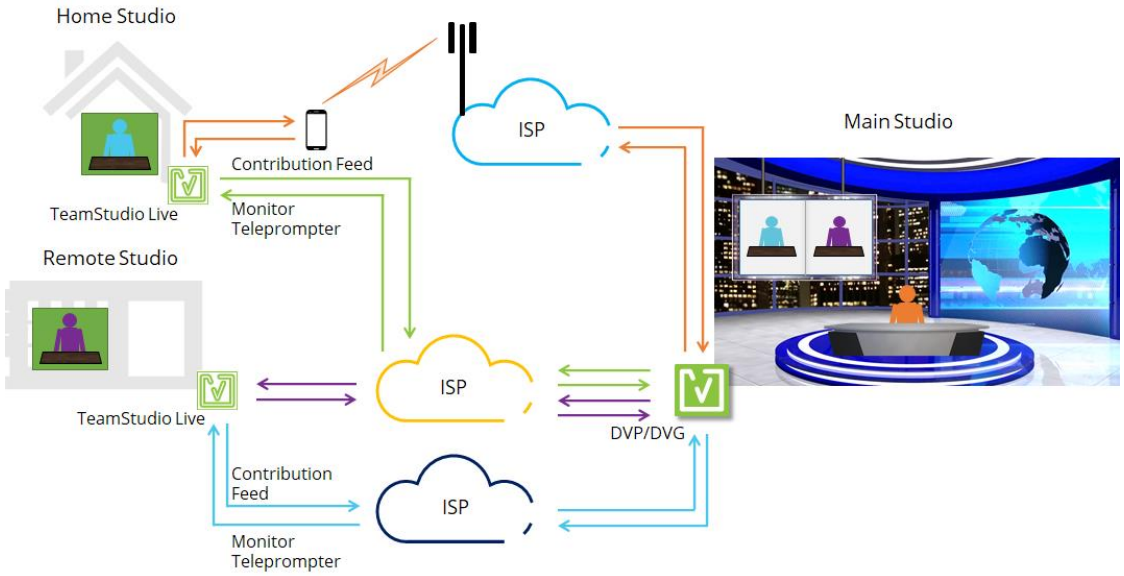
TeamStudio Live – Live Program Collaboration over Any IP Network

VideoFlow's breakthrough TeamStudio Live product enables live program collaboration by connecting the main studio to remote locations over any IP network, including over the Internet. News anchors, meteorologists, and reporters can join the team in the main studio from remote locations and even from home over a secure, low-delay, and reliable connection.

One VideoFlow Digital Video Protection (DVP) or Digital Video Gateway (DVG) product is deployed at the main studio and one TeamStudio Live device at each remote studio. The live camera feed at the remote site connects to

the product's integrated ultra-low latency encoder. The signal is then sent to the device at the main studio via an encrypted VPN tunnel.

In the opposite direction, the monitoring feed, the intercom, and teleprompter feed (where applicable) are sent in real time to the remote studio, providing a seamless studio-like experience. TeamStudio Live also includes innovative options for synchronized IFB with the incoming feed.



Secure in-band management via the VPN tunnel enables technicians at the main studio to remotely configure, troubleshoot, and manage VideoFlow devices as well as any other connected equipment at the remote studio.

Concerning latency, TeamStudio Live uses VideoFlow's patented technology that recovers 100% of lost packets with the lowest delay in the market. Broadcast companies using the technology report transport delay of 50 ms in each direction, with a total of 13 frames (360 ms) of the encoder to decoder latency using an ultra-low latency encoder. To increase stability and reliability, TeamStudio Live supports SMPTE 2022-7 using a dual-stream (A path and B path) that decreases packet loss ratio to a level that minimizes delay further to the point that one request is sufficient to recover a lost packet.

Built-in, real-time QoS and QoE monitoring in real time at both the main and remote studios enhances network visibility. Network and stream statistics help the IT team identify poor network conditions and potential stability issues often before they impact viewers, allowing for faster troubleshooting and fine-tuning.

Operational Efficiency for TV Station/Producer

VideoFlow's TeamStudio Live product provides a complete toolset for TV stations looking to create professional and unified live broadcasts from multiple locations:

- **Low delay** – Minimum latency based on patented, Emmy® award-winning technology that recovers 100% of lost packets and optional SMPTE 2022-7.
- **Reliability** – 100% lost packets recovery under challenging network conditions (e.g., packet loss ratios exceeding 50%).
- **Remote in-band Management** – IT personnel in the main studio can easily configure, troubleshoot, and manage VideoFlow devices and other connected equipment at the remote studio without leaving their desk.
- **Robust security** – An integrated firewall blocks any unauthorized traffic from entering the TeamStudio Live device, while encrypted VPN tunnels protect against eavesdropping.
- **Network (QoS) and stream (QoE) visibility** – Real-time network and stream statistics on both ends let you identify the root cause of a problem quickly, hence reducing mean time to repair.
- **Rapid deployment** – Backed by VideoFlow's expert-level support, you can typically be up and running within 2-3 weeks.

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